

SIXPENCE

MAY 1945

# AMATEUR RADIO

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# AMATEUR-RADIO

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## MAGNETIC PHONOGRAPH PICKUPS.

The magnetic pickup made possible the change from acoustic phonographs to the electrically amplified type, bringing with it improvements that had always been the dream of every phonograph engineer. Accurately controlled volume level, power output limited only by the amplifier used, greatly increased frequency range and controlled tonal effects were only a few of the advantages gained.

Early types of magnetic pickups were all very similar in design, operating at vertical pressures averaging about 6 oz. They were usually large and unwieldy, with great masses of weight attached for counterbalancing, in general, a far cry from present-day designs operating at less than 1 oz. pressure. However, they paved the way for the modern phonograph, and still have advantages for specific applications where other types of pickups have proved inadequate.

Pickup Design, Fig. 1. illustrates the most conventional type of design. Both pole pieces and armature were machined or formed from soft iron or high permeability alloys. The armature, in an approximate shape of a cross, had section "A" machined or swaged to a cylindrical shape, about which were fitted rubber sleeves, to act as bearings, the pole pieces were so shaped as to retain and compress the rubber bearings when assembled to a back plate (not shown), which permitted the armature to reciprocate in an approximate lateral plane only, indicated by the double arrow.

The magnet was a permanent horse-shoe type, tungsten in early designs, and cobalt alloys in later models.

A coil of wire surrounded the armature, being spaced to permit the armature to move, and held rigidly in the pole piece assembly. The impedance of the device was determined by the number of turns of wire used, high impedance pickups having as much as

10,000 turns of No. 44 EN wire, with a resulting impedance of 1,000 cycles of about 50,000 ohms.

Air gaps existed on each side of the armature and the upper pole piece tips, which varied with different designs from .008" to .018" each. However, when once determined for a particular design, these were held very closely by means of assembly gages.

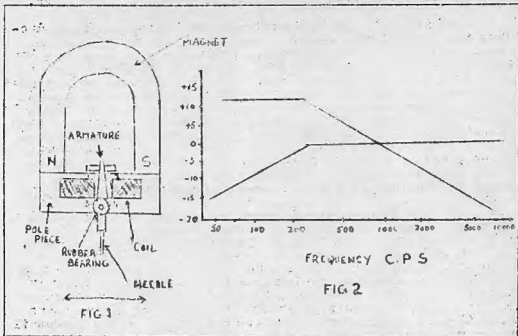
Since a decided magnetic attraction existed between the armature and the pole piece tips, some means was necessary to center the armature in the air gap by overcoming the attraction, but which would permit the armature to reciprocate between the tips when driven by the record groove. The material most commonly used for such a centering block was gum rubber and, later, a loaded rubber stock. The centering block was slotted to receive the free end of the armature, and was in turn clamped to the pole piece assembly in such a manner that it could be moved laterally, thus centering the armature in the air gap.

An equivalent fixed air gap existed between the lower part of the armature and the lower pole piece tips, through the rubber bearings. There was no metal-to-metal contact between the armature and the pole pieces.

In operation, the armature reciprocated between pole piece faces 1 and 2, varying alternately first one and then the other air gap. Thus, when the armature was nearer to 1, a greater number of lines of force appeared through the armature between 1 and 4, since the reluctance between the north and south poles of the magnet was smallest for that magnetic path. When the armature approached face 2, conditions were reversed, the lines of force through the armature were also reversed, being predominant between 2 and 3, and current was generated in the turns of wire due to the reversal of flux through the armature.

Now that we have a general picture of a simple magnetic pickup, let us consider certain design considerations necessary for desirable characteristics.

Design Considerations. Voltage output is dependent on flux density, saturation, the number of turns of wire in the coil, and velocity. By velocity is meant the speed at which the armature travels as it reciprocates in the air gap. Flux density is dependent on the magnet used and the reluctance of the air-metal circuit between the magnet poles. Only one precaution need be observed with respect to flux density, namely, that the armature must not be saturated at any time. Saturation would result in distortion, and would particularly affect the



dynamic range and response of the pickup. Fortunately, this condition is rarely encountered, since the air gaps are usually sufficient to prevent it, but in attempting unusual designs, it is well to keep saturation in mind.

Increasing the number of turns of wire does not result in a proportionate increase in voltage, since the resistance of each turn increases as the turns become larger, but in any practical design, a worth while gain may be had.

Velocity, when considered from a pickup standpoint is not a variable to be tampered with indiscriminately. It may be changed in any one design by increasing the ratio of the distances between the bearing and needle point, and the bearing and upper air gap, so that for a given distance of travel of the needle point, the armature between the upper pole piece faces will travel a greater distance, but such practice invariably results in greater difficulties with resonance, to be discussed later. Good design practice calls for a ratio of about 1 to 1.

Voltage output is the simplest of the design problems to deal with, since adequate gain is available in any good amplifier, at little or no cost. Very worth while savings may be effected by using low cost materials in the pickup design,

resulting in low flux density and less output, and letting the amplifier carry on from there.

Resonance. As is usual with all electro-mechanical devices covering a wide frequency range, we come to the important problem of mechanical resonance. This has been discussed at some length in previous articles, 1. and 2, in connection with tone arms and crystal cartridges. The resonance conditions encountered in a magnetic pickup, however, are much more severe than in a crystal cartridge, because of the fact that the armature must have low magnetic reluctance and for a given mass, such metals and alloys exceed by far the weight of aluminum and magnopium used in making shucks for cartridge. In order to obtain a frequency range beyond 5000 cycles without resonant peaks or cutoffs, a great deal of thought must be given the armature, striving for the lowest possible mass and greatest stiffness.

With a few exceptions there has been a notable reluctance to break away from the conventional design as shown in Fig. 1, and this design is definitely limited mechanically when one begins to think in terms of response to 10,000 cycles, and tracking pressures of less than 1 oz. The prime reason for lack of improved design may be traced directly to the indifference of magnetic pickup users that the voltage output be kept relatively high. 2.5 to 3.0 volts RMS at 1000 cycles was not unusual at tracking pressures of 6 oz. Gradual refinements over a period of years resulted in tracking pressure being reduced to about 2.5 oz., and approximately .5 volts output.

Vertical Inertia. In considering further reduction of pressure, the problem of vertical inertia, discussed in the article on tone arm design, becomes of prime importance. While it is simple enough to reduce the effective vertical pressure of the system by counterbalancing, either by spring or weight, such counterbalancing in no way decreases vertical inertia, quite to the contrary, weight counterbalancing increases it. Therefore, in order to avoid groove skipping, particularly in coin-operated phonographs, the total mass and weight of tone arm and pickup must be kept at a minimum. This in turn means a lighter, smaller magnet, as well as attention to every detail in order to save weight, and the inevitable result must be decreased voltage output. In addition, a pickup mechanism cannot be made to track at low pressures unless it has a suitably high compliance, which can be obtained only by small light moving parts, a minimum of damping and centering resistance, and a good frequency range, and finally must be made at the expense of voltage output. If users of magnetic pickups would be content with approximately 0.1 volt output, very definite improvements could be made in magnetic pickup design.

# Transformer Problems

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## ABAC TRANSFORMERS

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A two-fold problem exists in centering and damping a magnetic pickup. Maintaining the armature in the magnetic center of the air gap, and yet permitting it to move freely when driven by the groove, is a condition requiring a tough, resilient system, unaffected by humidity and temperature changes, and showing little change of characteristics over long periods of time. In addition, the armature must be adequately damped to overcome resonant peaks and transient response. Unfortunately the requirements of a good centering material and an efficient damping material are very much in opposition with each other. The very nature of damping material requires that it be soft and with a minimum of resilience. Obviously, such could not be used for centering.

Centering. Probably the simplest, most efficient, and least expensive means of centering is pure gum rubber. It may be applied mechanically in a number of ways, the only precaution being that it be used generously, and not in small blocks, which tend to age much more rapidly. But such centering is useless, from a damping standpoint, since rubber so used lacks that ability to a marked degree. Damping must then be applied separately, using a material having the desired qualities. Both centering and damping may be applied in compression or shear, however, compression is preferable, since in shear, a portion of

the material is necessarily carried with the armature, and thus adds to the mass and weight of the moving system. This in spite of the fact that damping in shear is more effective.

Much research has been done in attempting to obtain better damping materials. Many compositions have been tried, some borrowed from other industries, and a few satisfactory compromises have been found. It is possible to both center and damp with one material, but such material never has both properties to a satisfactory degree, and failure can result if precautions are not taken from a mechanical standpoint. In addition, materials having good damping qualities are invariably subject to severe changes in characteristics with changes of temperature. Increased temperature results in decreased damping efficiency, and resonant peaks appear in the pickup response.

It is to be hoped that among the many new materials being produced today, a more suitable damping medium will be found, particularly with respect to temperature effects.

**Bearings.** There is little to be said about bearing systems. Rubber has been used in the majority of designs, being simple, effective, and inexpensive. Knife-edge bearings have been used successfully, and result in long operating life, but have the disadvantages of added cost, mechanical noise, and aggravation of resonance problems. A combination of rubber and knife edge has also been used but with little success. If a rubber bearing system is to be utilized, precautions should be taken to see that pure gum stock or its equivalent is used, and that the walls of the tubing or sheet be as thin as practical. Excessive wall thickness will result in loose play of the armature at the bearings, becoming more pronounced in effect as the frequency increases, low efficiency and distortion can only result.

The magnetic pickup differs from a crystal device in that the voltage output is proportional to velocity. Reference to Fig. 2 illustrates the comparison between theoretically perfect crystal and magnetic pickups. A perfect magnetic pickup would reproduce the magnetic recording head characteristic, since both are proportional to velocity. The loss of bass response below 250 cycles is due to the constant amplitude recording characteristic of commercial home type records, made necessary to avoid break through between adjacent groove walls.

Unfortunately, the magnetic pickup cannot be compensated so readily as the crystal, as illustrated in the article 2 on crystal pickups. Similar adequate networks would require the use of large iron-cored inductances and large capacitors, whose cost and space requirements would be prohibitive.

It is much simpler to make the necessary compensations in the amplifier circuits, wherein suitable bass compensation may be had with little cost.

Moving Coil Types. Moving coil, or dynamic types of pickups have been designed, with varying success. They differ essentially from the armature type in that a coil of wire is movably suspended in an air gap and, when driven by the record groove, cuts lines of force existing through it, with a resultant generation of current proportional to velocity. The inherent drawback is reduction of weight in the moving system, which compels the use of very few turns of wire, as few as one turn being used. Since such a device would have very low impedance, it must be coupled through a suitable transformer for maximum efficiency. The transformer, in turn, is expensive and tends to aggravate hum pickup problems since it must be located closely to the pickup, to avoid excessive losses.

A distinct advantage, however, is that there is no centering problem because, by use of proper materials, there exists no magnetic attraction between the moving system and the pole piece assembly.

Successful moving coil systems have been expensive, delicately made, and suitable for use under exacting conditions, where they give a splendid account of themselves. It is not at all impossible, however, that the design may be applied to routine phonograph requirements with success.

The magnetic pickup has been neglected to a large degree since the general acceptance of the crystal types. However, it has demonstrated its dependability under adverse operating conditions where crystals are inadequate, and is by no means obsolete. General acceptance of low voltage outputs could result in some startling improvements that might well place it at the head of desired pickup types.

From an article in "Radio"

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1. Tone Arm Design - DAILY, RADIO, JULY 1944.
2. Crystal Phonograph Pickups - DAILY, RADIO, SEPTEMBER, 1944.

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ARE YOU A MEMBER?

IF NOT; WHY NOT ?

CONTACT YOUR DIVISIONAL SECRETARY IMMEDIATELY .



NEW TUBES

It is a far cry from today's complexity of tube types to the early days of radio when one or two types only were available.

Since the advent of the metal tube in 1935 there has been a never ending stream of new tubes pouring from the developmental laboratories.

Needless to say the war has been responsible for tremendous advances in the science of electronic tubes.

Most of these wartime developments have naturally been shrouded in secrecy; but ever so often the veil is lifted just sufficiently to allow a glimpse of what has been done.

Much of the developmental work has been done on tubes for the Ultra and Hyper High Frequencies, and owing to the tremendous field for portable, mobile, walkie talkie etc. many of the new tubes are miniature types.

The RCA list of minatures which was introduced in 1940 with four 1.4 volt type tubes, now numbers eighteen. Included in this list are the 9001, 9002 and 9003 which are similar in characteristics to the 954, 955 and 956 acorn types, but use a standard miniature envelope with a 7 pin glass seal base.

Recently in this series is the 6J4 which is a high mu triode especially designed for use at UHF. According to published data the 6J4 has a transconductance of 12,000 micromhos and a mu of 55, and can be used as a grounded grid amplifier at frequencies up to 500 Mc.

Also just released in the miniature series is the 2D21 Thyratron intended for use as a control tube. The 2D21 is capable of handling peak currents of 500 milliamperes. Incidentally the sizes of these minatures are - height  $1\frac{7}{8}$  inches seated; diameter  $\frac{3}{4}$  inch and average weight  $\frac{1}{2}$  ounce.

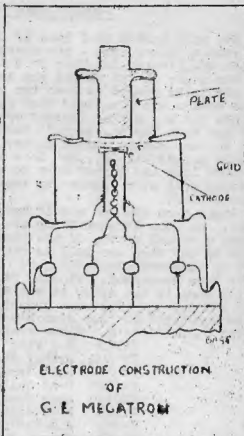
Possibly the most interesting developments in the tube world are the G. E. Megatrons popularly known as "Lighthouse" tubes.

Developed by General Electric for military use, the Lighthouse tubes have now been removed from the secret list. These tubes feature an entirely new type of construction as shown in Fig. 1.

Instead of the plate, grid and cathode being arranged around one another in cylindrical fashion as in conventional design these tubes are constructed with the electrodes in parallel planes. The glass envelopes and metal electrodes are fused together by a special process, ensuring an extremely rigid construction.

The design allows a very low plate-cathode capacitance and reduction of electron transit time to a minimum. As a result the tubes are capable of extremely efficient operation at very high frequencies. They have been manufactured in a large range of both receiving and transmitting types.

Not only in the receiving type tubes has progress been made. Rimaac have developed a series of transmitting tubes primarily for use as pulse generators. Their interest to us as Eams, especially in view of the proposed extension of Ham frequencies into the Hyper Highs, lies in the fact that they are designed for operation in the 200-400 Mc range. Although no data is at present available on the operation of these tubes as amplifiers it appears that they will be capable of delivering real power as oscillators in the HRF range. They are characterised by extremely low interelectrode capacitances dual leads to electrodes to facilitate neutralizing and special bulb design to allow voltages as high as 15,000 to be used. They are made in sizes from 15 watts to 300 watts plate dissipation.



The increasing applications of electronic heating in industrial uses has been responsible for the development of small but high powered oscillator and amplifier tubes. RCA features two such tubes the 9C21 and 9C22 which are capable of an output of 50KW at 25 Mc. The 9C21 is a water cooled triode and the 9C22 is fitted with radiating fins making it look surprisingly like an aircraft cylinder.

Westinghouse also have just released the W1475 a Pilotron no larger than a mans hand yet capable of delivering 2½ KW at UHF.

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Friends of Sgnt. M. R. (Snow) Campbell, VK3MR will be delighted to learn that his people have received a cable stating that he is safe in London. We hope to see him home in the very near future.

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SLOUGH HATS and FORAGE CAPS

You will pardon me I hope if I more or less fill this month's page up with a letter from a new source...so, introducing a Ham, one VK5VG ..SJT, H.A. Vinning 133 Wing No 2 Coy. IASTB Bonegilla. He says, "I am on the staff at the school the Army is running here and occasionally we are lucky enough to have the pleasure of teaching a ham. About five months ago I noticed that one of the students was more interested in how the rig perked instead of the often met aptitude of "munch the key and hope for the best." Suddenly this particular student grabbed the key and rattled out a snappy little CQ DX. I picked up my ears and he signed VK2ACX...and that is how it started, and from then on we swapped lies and bashed ears to no small order. Next course a new officer took over command of the school, to wit, Lieut. Arthur Stowar (nee VK2ACX).

Since then ACX and myself have held, almost daily, a two-ham ham-fest. We were constantly on the lookout for other hams, as this place, being a signal depot, is the place to find hams. One by one we managed to QSO them and 2ACX is pleased to relate they nearly all QSL, and he is gradually filling up the wall with QSL cards of those who have been contacted. Finally 2ACX suggested that seeing we had quite a few hams in the area, it was time we hold a Ham-fest where we could all get together for some unrestricted ragchewing. The arrangements were completed and our dinner was held at the Albury Hotel at 1800 hours on April 15th. Those present were:-

VK2EN	Reg Flood (Signm)
VK2ACX	Arthur Stowar (Lieut)
VK2CJ	Noel Arnold (Albury Businessman)
VK2AJM	Fred Bull (SJT)
VK2AJO	Alan Jacobino (S/SJT)
VK3FR	Fred Smith (SJT)
VK3NR	Jim Watson (L/CPL)
VK3VG	Howard Vinning (SJT)
VK3ZD	Ren Williams (Lieut)
VK5LO	H. Loisor (SJT)
VK5RT	Bob Manuel (Capt)
	Jim Todd (No call allotted)

Because duty called, those in the area but couldn't make it...

VK2AC	John Proust (Engineer at 2AY)
VK2CI	Lloyd Davies (Capt.)
VK2AIZ	Gordon Nolan (Engineer at 2AY)
VK3VR	Sid Rogers (CPL)
	Mark Doonan (Lieut)

Naturally the only topic of conversation was Ham Radio and we concluded the ragchew at about 2200. 2CJ said it was the most hams he had seen altogether for many years and I suppose it was one of the biggest gash rags of the area since that fateful day of the red telegram. A good time was most certainly had by all, and everyone agreed that there should be more of the, conducted at regular intervals.

2ACX and myself are, unfortunately, more or less permanent fixtures here, but the majority of the others make up the floating

population that must exist at a signal depot, such as this. So by the time we hold our next Hamfest it is hoped that there are a few new faces and 2ACX has some more QSL's on his wall. Could you mention in our column that THE SECOND JOB OF ANY HAM UNFORTUNATE ENOUGH PASS THROUGH THIS PLACE? IS TO QSO EITHER PERSONALLY OR THROUGH HOME 2ACX OR MYSELF. THE QRA IS BLOCK 7 THE PHONE NR EXTENSION 46 ON THE CAMP SWITCH.

Many a Ham has passed another without knowing it. It certainly pays to advertise, but I don't suggest going to the lengths one Ham did, when in Jerusalem, and his cups, too, he had his call tattooed on his arm. However, he tells me it is as good as a QZ DX, it certainly brings 'em in. Hi! Another I met had his equipment marked with his call and that also brought results, besides that of the SGT-MAJ's wrath."

Thanks Howard, om. To my (ZYC's) way of thinking its the same old story of what could have been done and still can be done by Hams where that thing Hams have always talked and writted about, lives on...the good old Ham Spirit. Wars do not last forever, we seem to see the beginning of the end of this, but our Hobby goes on, so far and only so vitally alive as this Ham Spirit keeps it.

Well, it looks to me from what I can hear that if you want to find out where all the RAANWR are these days you had better take a trip up around the equator...who wouldn't in Winter...and you will find most of them up there. Its a funny thing though...not one of them seems too enamoured of these lovely tropic isles...its just another case of you can't tell everything from a picture, and tropic beauty isn't a ven skin deep.

Our ex State Divisional President 2UX has, after much trying, managed to get out of VK...he is just about in front of those AWAS now. When I think of some "Secret" answers I may write to him.

VK2RY has had a trip down to VIC...spending his time hobnobbing with the boys at the Radio Physics Lab at Sydney University. He tells me a couple of the WRANS at Harman have been brothers, one a VK7 and another a VK2. Wonder who will use the old rig in those places after the War?

VK2CY P/O T ol Crawford Young is now on a newly commissioned Frigate. Its good to hear of those VK6's...news of whom is very hard to obtain, though I hear most of them are in the Services.

Somebody in mentioned meeting Bill Nash 2FW/4WN on his way up North to join Miss Slight 2ZA. Bill has just about been every where and seen everything so I was told...why keep it so dark Bill, om...(ZYC)

Well, om's very sorry to use up so much on the one subject, but my excuse is that it is these Wartime meetings, that will stick to VK Ham Radio after the war...and remove those remarks we sometimes hear. Fully expressed...he seems to think this....War is going to last forever"...Recreation and Service Radio Clubs seem to be the answer...he lets have more of them...and of course, send the reports to YOUR COLUMN...via VK2YC.

- DIVISIONAL NOTES -

Federal Headquarters

By medium of this, the first installment of FHR notes since the change of location of FHR from Sydney to Melbourne, the new Federal Executive makes the acquaintance of the members of the WIA and other readers of Amateur Radio wherever they may be.

The new Federal Executive has now had two meetings and apart from routing matters the most important item so far was a decision to contact the Chief Radio Inspector and secure an interview. This was duly arranged and the Members of Federal Executive spent a most interesting hour with Mr. Martin on Thursday, 26th April.

The main point arising from our informal chat with the Chief Inspector is that we at FHR must begin immediately to draw up a comprehensive plan for the conditions under which Amateur Experimenters in Australia will operate when the current international difference of opinion has been settled.

Now we could take this entirely upon ourselves and go right ahead with our own planning, based upon the ideas of the five members of Federal Executive, but we prefer, and we know you would insist, that the job be tackled in a more democratic way. We had therefore, prior to seeing Mr. Martin, asked each Division to appoint a small Committee to collect ideas on the matter of Post-War amateur radio and to forward their results to FHR. As stated elsewhere in this issue such a committee has been formed in N.S.W. and we hope that something similar can be arranged in other States.

Such a set-up unfortunately makes no provision for members in the services who are located at points remote from Divisional Headquarters, however there is nothing to prevent such members, and in fact non-members, from writing direct to the Federal Secretary who will welcome any ideas you may care to send, individually or collectively.

Just before going to press we have received via the Victorian Division a most interesting letter from VK3VG who, with a dozen or so other Hams has conducted a Ham-Fest at Albury recently and proposes to make it a regular affair. Apart from having a good old-fashioned raghow these boys have submitted a foolscap page full of ideas on almost every aspect of post war activities. (A copy of this will be published next month...ED)

Such information is of the utmost value to us as we simply must find out what the rank and file members are thinking, therefore we earnestly recommend to you that this example be followed wherever possible and that study groups, discussion circles or just plain oar-bashers clubs be started (call them what you like so long as they serve the desired purpose) wherever and whenever Hams in the services may meet.

(Continued on Page 16)

NEW SOUTH WALES DIVISION

The April General Meeting of the New South Wales Division insofar as it marked the beginning of the Division's post war plans for the Institute. After a period of five years the services of an outside Lecturer were availed of and the wonderful support accorded this move spoke well for the future.

In addition the April Meeting was the last to be held at the Y.M.C.A. as arrangements have been made to hold future Meetings of the Division at Science House, Gloucester Street, Sydney. Council were fortunate in obtaining space at Science House - a meeting place much more in keeping with the Institutes standing - but what is more important, Meetings will still be held on the third Thursday with the exception of the November Meeting which will be held on the 22nd of that month. Science House is situated on the corner of Gloucester and Essex Streets and those Members who come by train should break their journey at Wynyard, proceed north along York Street, turn into Grosvenor Street and Gloucester Street runs off Grosvenor Street. Members coming by tram via George Street should get off at Essex street, one stop past Bridge Street and walk up the steps. Members coming from the Eastern Suburbs should get off at Bridge Street, walk down to George St., then either up to Gloucester Street or down George Street to Essex Street.

Before declaring the meeting open for General Business one minutes silence was observed in memory of President Roosevelt and Anzac Day.

In all there were 42 persons present including a representative of the daily press and the Amateurs included W6MOV, VK3OB, VK2 AFB, M3, DL, WD, NP, LO, JR, ZI, TI, AKR, NO, JU, RA, WN, AGA, JN, OM, ABM, HP, TF, JF, AMT, YC, Messrs. Blackett, Bruell, Glascock Jnr, P/O Tel. S. Clark and many others.

Members were informed that pursuing its course of building up Assets, the Division had made an investment of £20 in the third Victory Loan Total investments during the past six months have amounted to £36 and it is hoped to reach the £50 mark before the end of the year.

The question of Post war Equipment for Experimentors has been engaging the attention of Council at various times during the past few months and members were asked their opinion regarding a suggestion that a debate be held on this subject and following on this, manufacturers be asked to address the meeting and state their plans and if possible display their product. The amount of discussion that arose from this announcement augurs well for the debate. As a matter of fact it could have quite easily taken place there and then!

Two letters from Federal Headquarters were read to the Meeting the first congratulating the retiring Federal Secretary VK2TI and the other members of the Executive on the splendid work carried out whilst New South Wales was Headquarters Division during the darkest days of the war. The second gave details of Office-Bearers of the New Executive and suggesting the formation of a post-war Planning Committee to formulate ideas for the post war era. It was pointed out that F.H.Q. already should have a wealth of information on this matter from the recent essay competition. Nevertheless it was decided to give the matter consideration.

Don Knock VK2NO informed the meeting that tests carried out by the Ski Club of Victoria Radio Rescue Network had been heard at excellent strength in Sydney during the Easter week-end.

The main item of business for the evening was a Lecture given by Mr. J. Reed on Radio Frequency Heating. The lecture proved of great interest and was delivered in 2JR's inimitable style. A vote of thanks upon conclusion was carried in a very hearty manner.

Don't forget the next meeting of the Division will be held at Science House, Gloucester and Essex Streets Sydney. It will take place on Thursday 17th May at 8 p.m. and it is anticipated that the Lecturer will be Mr. W.W. Hanner of A.W.A. Ltd who will deal with the "Aircraft Radio Problems". All Experimentors are invited to be present.

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#### SYDNEY HARBOR PATROL

By the time these notes are read it is anticipated that the Armistice will have been signed in Europe. With the signing of the Armistice it is anticipated that the populace will give vent to pent up feelings of nearly six years of war, despite the efforts emanating from certain quarters to restrain any demonstrations of relief. It is fully realised that the signing of the Armistice will not mean the end of the war of the Pacific, but the writer is optimistic to feel that once bombers and assaults are replaced by Bulldozers and Flamethrowers etc., it won't be very long.

During the Armistice Celebrations the Sydney Harbor Patrol will be on the job covering Sydney's waterfront and of course communications will play a vital part. It is anticipated that eight boats will be on duty, four of which will be equipped with two way Radio. The other boats will have Receivers and will be in sight of craft equipped with two way radio and will communicate by means of flags or Morse lamp. In addition a station will be located at the Patrol's Headquarters at "Sea Horse".

The Control Station will be located at N.E.S. Headquarters and the whole of the operations will be under the control of the Police Departments. It is anticipated that the operators at Control will have a pretty busy time. Let's hope that its a week-end!

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### EMERGENCY COMMUNICATION NETWORK

The Network still continues to hold monthly Exercises and occasionally a rag chow has been held at the conclusion of exercises. One notable one was between 2TI and 2NO and brought back memories of the good old days.

Network facilities have been placed at the disposal of the Police Department during the Armistice Celebrations and at the time of writing this matter is under consideration by the Department. It is confidently expected that these stations will be made use of but in what direction it is not possible to say at this juncture. In the meantime each Section Leader should check over the installation under his care and make certain that there will be no breakdowns. It is suggested that each station instal a new mike battery!

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### BUSHFIRES RADIO NETWORK

The Network continues to expand at both Dubbo and Young and in each of these centres a Truck Set and two portables are in operation.

VL2EA-Dubbo Truck Set - continues to be heard in Sydney at good strength varying from R7 to R8 whilst the portable 2EB is also heard varying from Q5 R7 to Q3 R4. 2EC has not yet been heard although known to be in operation. Up to the present experiments at Dubbo have been carried out from fixed locations and on Sunday 29th April a Field test will be held, and on the following Sunday 7th May it is proposed to stage a demonstration for the benefit of the Shire Councillors. Max Moore VK2 11, Bill Brook VK2ACT and Tom Stroud VK2AMR have put a great deal of work into this Network and Dubbo should be well prepared by the time next summer comes round.

VL2EE-Young Truck Set is also heard in Sydney not quite as strongly as VL2EA and also has a tendency towards frequency drift. 2EF and 2EG are the portables attached to 2EA and it is understood that they are both working although not heard in Sydney as yet.

As previously mentioned these stations may be on the air practicing any night in the week and definitely Friday nights using a frequency of 3115 Kcs at a bout 8 p.m. and reports would be appreciated. They should be sent to H. J. Taylor "Bonnie Doone" Montoagle via Young or M. Moore, McDonald Street, Dubbo.



## - VICTORIAN DIVISION -

The May Meeting of the Division has come and gone, and an interested gathering were entertained by a short lecture and demonstration with the aid of an Oscilloscope, of the Resistance Capacity Oscillator described in a recent issue of Amateur Radio by Mr. J. K. Ridgway.

To follow our usual custom those present were:- VK3's VX;PJ; MW;IK;RZ;EG;JT;XD;YL;CN;OX;YCH;BQ;PU;KK;UQ;HX;JO;WY;WQ;K.Ridgway and VU2EB.

Ern Cook VK3EC late of the RAAF and now once again in civies spoke of some of his experiences while travelling round, and hoped that as he was now located in VIM would be regular visitor at meetings. VK3JT also a member of the RAAF also spoke of some of his experiences.

Probably the item which caused much speculation was the small portable broadcast receiver brought along by VU2EB. A moulded case some eight inches by four inches by two inches contained a complete four tube super together with speaker and batteries. Naturally the gathering was not satisfied until they had examined the works,

Well now for the GOOD news. The movie show which Harry Kinnear VK3KN, intended to put on at the April meeting, but was postponed by circumstances outside his control, will definitely be screened at the JUNE MEETING which will be on Tuesday 5th June. Circumstances permitting it is intended to screen the same show which was previously advertised. That is, The Cathode Ray Oscilloscope, and Thermionic Tubes. One or two short subjects will complete the show. So don't forget it chaps, it will be worth waiting for.

The Laboratory Committee have handed me another report, and I've got to publish it otherwise I'm in dutch with them. They state that "Ken Ridgway has made some progress with his task of indexing technical articles in some of the periodicals in the Library. This will be a lengthy job, but once back issues have been indexed, keeping the index up to date will be a comparatively simple matter. When completed, ready reference to all technical articles pertaining to any specific subject will be available and the time likely to be saved by its use will more than compensate for the time spent in the actual work of indexing. We are indebted to Jim Marsland for the idea."

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#### FEDERAL HEADQUARTERS:

The previous Federal Executive made a good start with their Essay Competition. Let's keep the ball rolling, we want every opinion of every Ham, we don't care if there are a million of them, keep them coming. Post-War Amateur Radio will be largely what YOU make it, but we must start NOW.

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# THE WIRELESS INSTITUTE OF AUSTRALIA



Divisions of the Wireless Institute of Australia exist in every State of the Commonwealth. The activities of these Divisions are co-ordinated by Federal Headquarters Division, the location of which is determined from time to time by ballot.

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**Official Organ :** "AMATEUR RADIO"—Published by the Victorian Division.

## VICTORIAN DIVISION

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The N.S.W. Division meets on the third Thursday of each month at Y.M.C.A. Buildings, Pitt St., Sydney and on invitation is accorded to all Amateurs to attend. Overseas and Interstate Amateurs who are unable to attend are asked to phone the Secretary at FX3305.

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